

## Hospitalizations of Persons with Diabetes

Persons with diabetes are at greater risk of hospitalization due to complications such as diabetic ketoacidosis (toxicity from using fat for energy instead of sugar), end-stage renal disease (the final stage of kidney disease), lower extremity amputation, and cardiovascular disease.

In 2009, the age-adjusted hospital discharge rate in Virginia for persons with any diagnosis of diabetes was **201.7 per 10,000 persons**.

Because a diabetes diagnosis may occur in one of 18 diagnosis fields, limiting analyses to primary diagnoses underestimates the burden of diabetes-related hospital stays. The age-adjusted hospital discharge rate of persons with a primary diabetes diagnosis was 14.5 per 10,000.

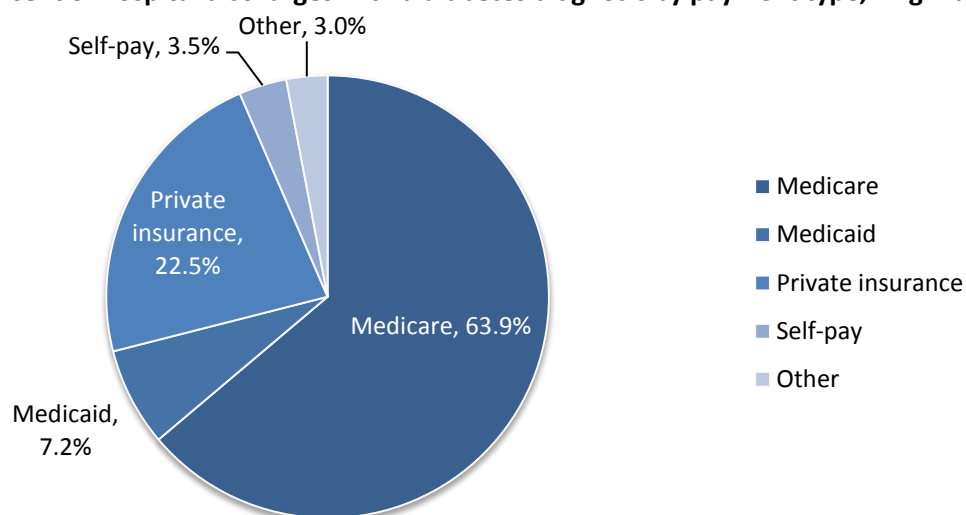
### Summary statistics for hospital discharges with a diabetes diagnosis, Virginia, 2009

	<u>Any diagnosis</u>	<u>Primary diagnosis</u>
<b>Total diabetes discharges</b>	163,478	11,681
<b>Hospitalization rate</b>	207.1 per 10,000	14.5 per 10,000
<b>Percent of all hospitalizations</b>	19.8%	1.4%
<b>Total charges</b>	\$5.16 billion	\$280.6 million
<b>Average charges per discharge</b>	\$31,538	\$24,026.00
<b>Average length of stay</b>	5.5 days	4.9 days

Source: Virginia Health Information Hospital Discharge Dataset, 2009

- Nearly two thirds of hospital costs for persons with a diabetes diagnosis was paid by Medicare, and in 2009 costs paid by Medicare for persons with diabetes totaled \$3.3 billion. Private insurance costs for persons with diabetes totaled \$1.2 billion.

### Percent of hospital discharges with a diabetes diagnosis by payment type, Virginia, 2009

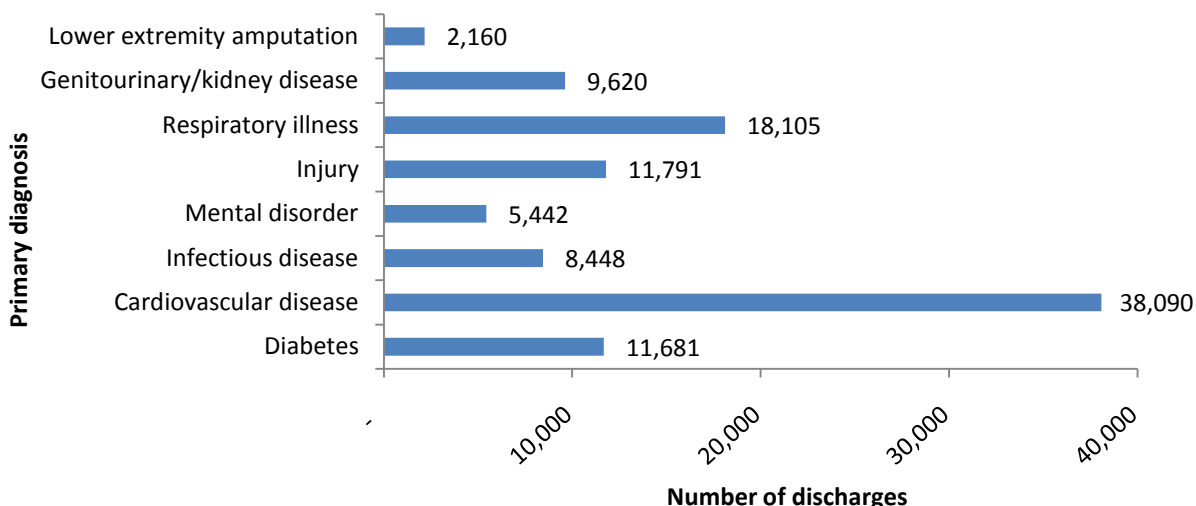


Source: Virginia Health Information, Inc. Hospital Discharge Dataset, 2009.

Data notes: Diabetes as a primary or any diagnosis were calculated using ICD-9 diagnosis codes 250.xx. Rates are age-adjusted based on 2000 U.S. Census data and are per 10,000 population.

- Of persons with a diabetes diagnosis who were hospitalized in 2009, nearly 1 in 4 (23.3%) had a primary diagnosis of cardiovascular disease. Only 7.1% of persons with diabetes had "diabetes" recorded in the primary diagnosis field.

### Primary diagnoses of persons with diabetes who are hospitalized, Virginia, 2009

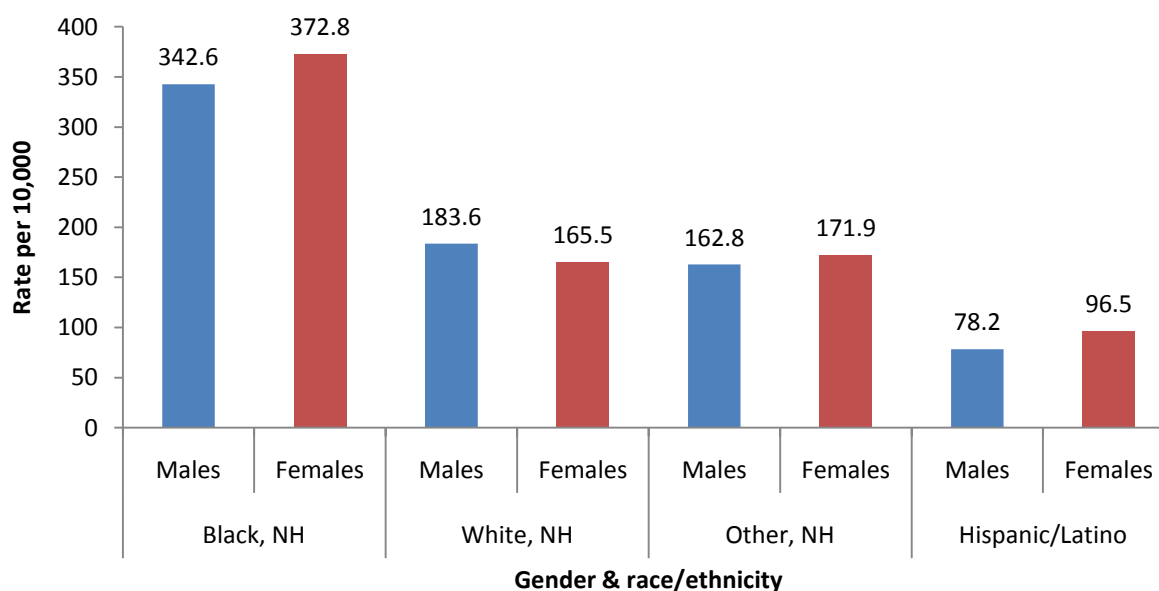


Source: Virginia Health Information, Inc. Hospital Discharge Dataset, 2009.

Data notes: ICD-9 codes for primary diagnoses were as follows: diabetes (250.x), cardiovascular disease (39.x-44.x), infectious disease (10.x-13.x), mental disorder (29.x-31.x), injury (8.xx-9.xx), respiratory illness (46.x-51.x), genitourinary/kidney disease (58.x-62.x), lower extremity amputation (procedure code 841).

- Overall, females account for a higher percentage of hospitalizations with any mention of diabetes, though prevalence of diabetes is greater among men (9.0% in men versus 8.3% in women). Discharge rates for non-Hispanic (NH) black men and women with diabetes are nearly twice as high as those for NH white men and women.

### Age-adjusted hospital discharge rates for persons with diabetes by sex and race/ethnicity, VA, 2009



Source: Virginia Health Information, Inc. Hospital Discharge Dataset, 2009.

Data notes: Diabetes as a primary or any diagnosis were calculated using ICD-9 diagnosis codes 250.x. Rates are age-adjusted based on 2000 U.S. Census data and are per 10,000 population.

**Virginia hospital discharges with a diabetes diagnosis by gender, race/ethnicity and age group, 2009**

	<u>Any diagnosis</u>			<u>Primary diagnosis</u>		
	Total hospitalizations	Rate per 10,000	Percent with any diabetes diagnosis	Total hospitalizations	Rate per 10,000	Percent with a primary diabetes diagnosis
<b>Gender</b>						
<b>Female</b>	88,994 (54.4%)	199.8	18.1%	5,793 (48.8%)	13.7	1.2%
<b>Male</b>	74,482 (45.6%)	206.6	22.4%	5,888 (50.4%)	15.5	1.8%
<b>Race/ethnicity</b>						
<b>White, NH</b>	105,748 (64.7%)	172.6	19.5%	6,158 (52.7%)	10.8	1.1%
<b>Black, NH</b>	49,059 (30.0%)	359.6	25.4%	4,906 (42.0%)	33.3	2.5%
<b>Hispanic/Latino</b>	2,463 (1.5%)	88.8	6.7%	255 (2.2%)	6.0	0.7%
<b>Other, NH</b>	6,206 (3.8%)	189.5	11.9%	362 (3.1%)	9.9	1.4%
<b>Age group</b>						
<b>Under 25</b>	2,579 (0.1%)	1.5	0.1%	1,441 (0.6%)	1.0	<1%
<b>25-34</b>	4,283 (0.3%)	5.4	3.7%	1,048 (3.6%)	4.6	2.9%
<b>35-44</b>	9,684 (1.2%)	17.4	3.2%	1,579 (8.2%)	6.6	1.6%
<b>45-54</b>	22,682 (2.6%)	39.5	4.8%	2,236 (9.0%)	9.0	1.2%
<b>55-64</b>	35,148 (5.9%)	87.2	13.2%	2,031 (13.5%)	14.3	2.1%
<b>65-74</b>	40,525 (14.0%)	196.3	24.1%	1,593 (19.1%)	22.5	2.4%
<b>75-84</b>	34,332 (21.5%)	390.1	33.6%	1,248 (17.4%)	25.5	1.9%
<b>85+</b>	14,063 (24.8%)	763.4	37.1%	505 (13.6%)	33.3	1.5%
<b>Total</b>	<b>163,476</b>	<b>201.7</b>	<b>19.8%</b>	<b>11,681</b>	<b>14.5</b>	<b>1.4%</b>

Source: Virginia Health Information, Inc. Hospital Discharge Dataset, 2009.

Data notes: Diabetes as a primary or any diagnosis were calculated using ICD-9 diagnosis codes 250.x. Rates are age-adjusted based on 2000 U.S. Census data and are per 10,000 population.

- Though females account for a larger percentage of all hospital discharges with diabetes, age-adjusted rates are higher among men, and men who are hospitalized are more likely to have a diabetes diagnosis (22% vs. 18%).
- Similarly, NH white persons with diabetes account for nearly two thirds of discharges with diabetes, because a majority of Virginians are white. However, discharge *rates* are significantly higher among NH black Virginians, and black persons who are hospitalized are more likely to have a diabetes diagnosis than other racial/ethnic groups. Overall, diabetes prevalence is higher among NH black persons than NH white persons (13.5% vs. 8.5%).

## Hospital Discharges of Persons with Diabetes by Virginia Health District, 2009

### **Any diabetes diagnosis:**

Hospital discharge rates of persons with any diagnosis diabetes varied considerably across health districts (101/10,000 in Arlington to 412/10,000 in Crater).

Health districts with the highest any-diagnosis diabetes hospital discharge rates were:

- Crater 412 per 10,000
- Roanoke 331 per 10,000
- Southside 309 per 10,000
- Portsmouth 296 per 10,000
- Richmond 295 per 10,000

The higher total hospital discharge rates for diabetes in these five health districts may be related to the higher proportion of minority residents in those areas. Minority populations are at greater risk for hospitalization due to diabetes.

In 2009, the age-adjusted state total for any diabetes diagnosis was 201.7 hospital discharges per 10,000 population.

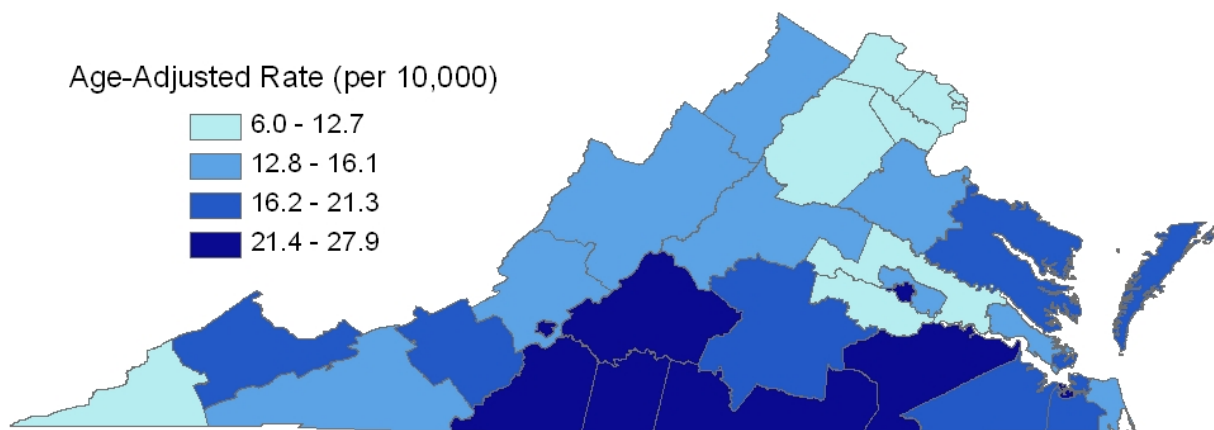
### **Primary diabetes diagnosis:**

Health districts with the highest primary diagnosis diabetes discharge rates were:

- Crater 27.9 per 10,000
- Richmond 27.7 per 10,000
- Portsmouth 27.5 per 10,000
- Roanoke 27.3 per 10,000
- Pittsylvania/Danville 25.9 per 10,000

In 2009, the age-adjusted state total for primary diabetes diagnoses was 14.5 hospital discharges per 10,000 population.

### **Age-adjusted hospital discharge rate (per 10,000) for primary diagnosis diabetes by Health District, Virginia, 2009**



Source: Virginia Department of Health, Virginia Health Information, Patient-Level Hospital Discharge Dataset. Based on discharges with primary diagnosis of ICD-9 code 250. Rates (per 10,000) are age-adjusted to the 2000 U.S. standard population. Classification is by quartile.

Updated by the Virginia Department of Health, Office of Family Health Services, Diabetes Prevention and Control Project on 7/2011. For more information, visit <http://www.vahealth.org/cdpc/diabetes/>.

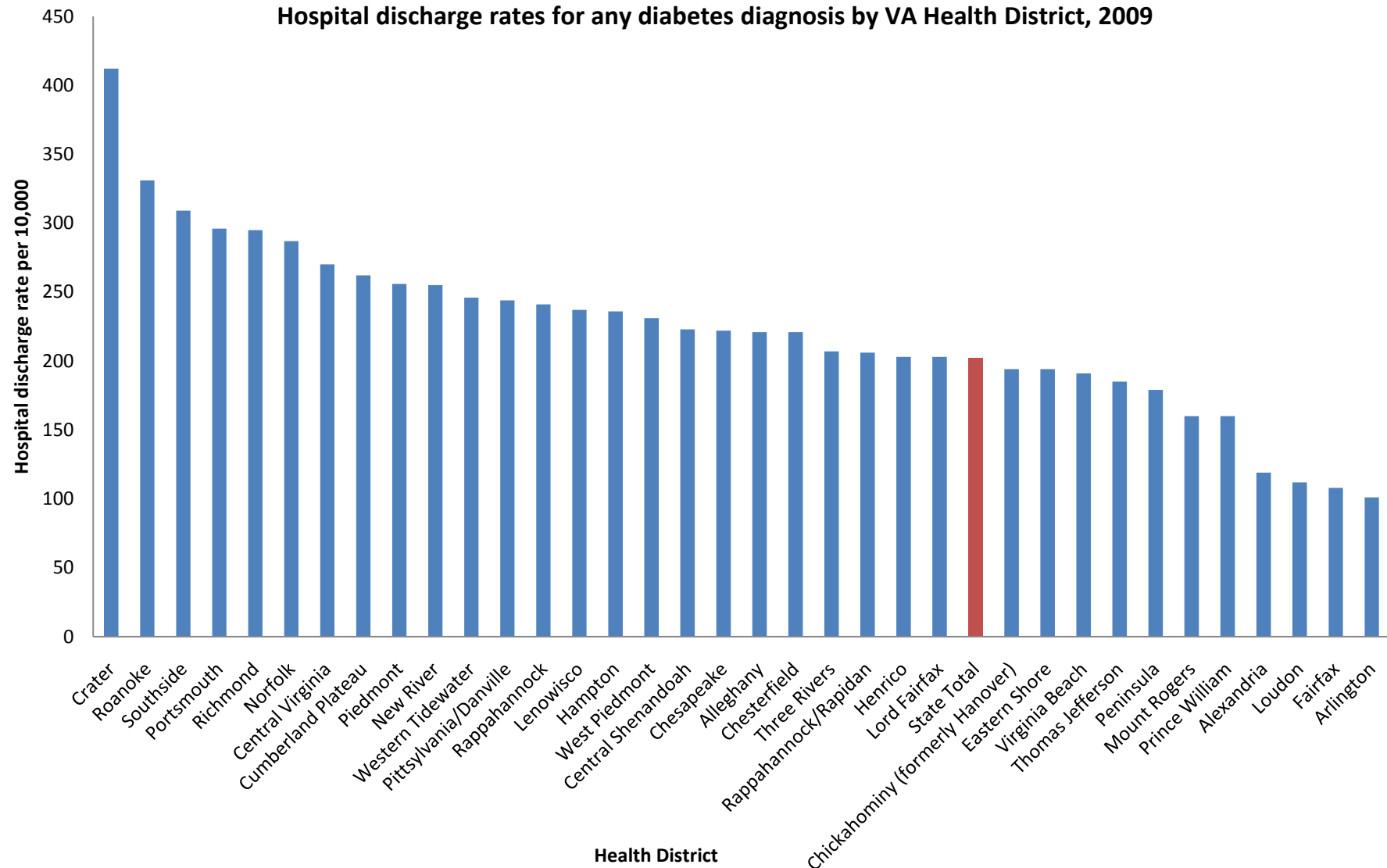
**Age-adjusted hospital discharge rates per 10,000 population with a diabetes diagnosis  
by Virginia Health District, 2009**

<b>Virginia Health District</b>	<b>Diabetes discharge rate , any diagnosis</b>	<b>Diabetes discharge rate, primary diagnosis</b>
Alexandria	118.7	9.1
Alleghany	221.5	15.6
Arlington	100.9	6.6
Central Shenandoah	222.6	15.3
Central Virginia	269.6	22.0
Chesapeake	221.6	19.1
Chesterfield	221.4	12.0
Chickahominy (formerly Hanover)	194.3	12.0
Crater	412.0	27.9
Cumberland Plateau	261.6	16.3
Eastern Shore	194.0	19.5
Fairfax	107.8	7.4
Hampton	236.2	18.8
Henrico	203.5	13.8
Lenowisco	237.0	12.7
Lord Fairfax	203.4	13.2
Loudon	111.6	6.0
Mount Rogers	160.2	14.0
New River	255.4	16.4
Norfolk	286.9	21.3
Peninsula	179.1	12.8
Piedmont	255.9	20.2
Pittsylvania/Danville	244.4	25.9
Portsmouth	296.1	27.5
Prince William	159.7	10.1
Rappahannock	240.8	16.1
Rappahannock/Rapidan	206.4	12.7
Richmond	294.6	27.7
Roanoke	331.1	27.3
Southside	309.0	24.4
Thomas Jefferson	185.4	13.9
Three Rivers	206.7	17.8
Virginia Beach	190.8	14.2
West Piedmont	230.9	23.8
Western Tidewater	246.0	18.9
<b>State Total</b>	<b>201.7</b>	<b>14.5</b>

Source: Virginia Health Information, Inc. Hospital Discharge Dataset, 2009.

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